IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of   :   Before the Board of Appeals

Eiji Komatsu   :   Appeal No.:

Serial No.: 10/000,445   :   Group No.: 2655

Filed: December 4, 2001   :   Examiner: M. Rivero

For: SPEECH INTERACTIVE INTERFACE UNIT

December 27, 2005

TABLE OF CONTENTS

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APPEAL BRIEF

U.S. Patent and Trademark Office
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Randolph Building
401 Dulany Street
Alexandria, VA 22314   Date: December 27, 2005

Sir:

In response to the FINAL Office Action dated June 27, 2005, and further responsive to the Notice of Appeal filed on September 27, 2005, the period for filing the Appeal Brief having been extended one (1) month to December 27, 2005, this corresponding Appeal Brief is respectfully submitted.

I. REAL PARTY IN INTEREST

This application is assigned to Oki Electric Industry Co., Ltd., which is the real party in interest.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences that may be related to, that will directly affect or be directly affected by, or have a bearing on the Board's decision in this pending appeal.

III. STATUS OF CLAIMS

Claims 1-14 (rejected).

Claims 1-14 have been finally rejected. Accordingly, claims 1-14 are being appealed.

IV. STATUS OF AMENDMENTS

Subsequent to the Final Office Action dated June 27, 2005, Appellant submitted a Request for Reconsideration dated August 23, 2005, without amending the pending claims. Thus, the claims have not been amended subsequent to final rejection.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The present invention relates to an interactive speech interface unit for operating applications using interactive speech, that has high field conversion properties and is easily customized by a user.

Accordingly, the invention, as broadly featured in independent claim 1, includes in combination a speech recognizer (101 in Fig. 1) that recognizes

input speech of user utterance and converts the recognized input speech into

a character string (e.g., page 5, lines 1-2); an input statement analyzer (103 in

Fig. 1) that analyzes the character string and converts the analyzed character

string into semantic representation (e.g., page 5, lines 4-5); an interactive

controller (105 in Fig. 1) that controls flow of an interactive status and

accessing an application (e.g., page 5, lines 7-10), the interactive controller

putting series of interactive sequences having calling relations together in a

plurality of interactive tasks having an upper interactive task and a lower

interactive task in a hierarchical structure, the interactive controller (105)

modifying one of the interactive sequences in an upper interactive task in

accordance with a lower interactive task (e.g., page 6, lines 24-36, and as

shown in Fig. 7); an output statement generator (108 in Fig. 1) that generates

intermediate language to be output to the user (e.g., page 6, lines 11-12); a

speech generator (110 in Fig. 1) that converts the intermediate language into

speech and outputs the speech (e.g., page 6, lines 14-15); an application

interface (111 in Fig. 1) that accesses an application (112 in Fig. 1) using the

semantic representation output from the interactive controller (105) (e.g., page

6, lines 15-17); and an interactive task hierarchical database (106 in Fig. 1)

that stores the interactive tasks including the modified interactive sequence in

a hierarchical structure (e.g., page 5, lines 10-11).

The invention, as broadly featured in independent claim 7, includes in

combination a speech recognition part (101 in Fig. 1) receiving speech from a

user, the speech recognition part (101) converting the input speech into a

character string (e.g., page 5, lines 1-2); an analysis part (103 in Fig. 1)

coupled to the speech recognition part (101), the analysis part (103) analyzing

the character string received from the speech recognition part (101) and

converting the received character string into a semantic representation (e.g.,

page 5, lines 4-5); an interactive task hierarchical database (106 in Fig. 1)

storing a plurality of interactive tasks each of which includes an interactive

sequence in a hierarchical structure so that the interactive tasks include an

upper interactive task and a lower interactive task (e.g., page 5, lines 10-11);

an interactive sequence memory (107 in Fig. 1) storing the interactive

sequence (e.g., page 5, lines 30-32); an interactive controller (105 in Fig. 1)

coupled to the analysis part (103), the interactive task hierarchical database

(106) and the interactive sequence memory (107), the interactive controller

(105) providing an interactive task in response to the semantic representation,

modifying the interactive sequence in the upper interactive task of the

interactive task in response to a lower interactive task of the interactive task,

and providing the lower interactive task with the modified interactive sequence

(e.g., page 6, lines 24-36, and as shown in Fig. 7); an output statement

generation part (108 in Fig. 1) coupled to the interactive controller (105), the

output statement generation part (108) generating an intermediate language in

response to the interactive task provided by the interactive controller (105)

(e.g., page 6, lines 11-12); and a speech generator (110 in Fig. 1) coupled to

the output statement generation part (108), the speech generator (110)

converting the intermediate language into speech and outputting the speech

(e.g., page 6, lines 14-15).

VI. Grounds of Rejection to be Reviewed on Appeal

The issues on Appeal are:

(1)   The rejection of claims 1-14 under 35 U.S.C. 102(e) as being

anticipated by the Norton et al. reference (U.S. Patent No. 6,510,411).

VII. Arguments

1) Claims 1-14 are patentable over the Norton et al. reference

Claims 1-14 have been rejected under 35 U.S.C. 102(e) as being

unpatentable over the Norton et al. reference. This rejection is respectfully

traversed for at least the following reasons.

Claim 1

The interactive speech interface unit of claim 1 includes in combination

a speech recognizer; an input statement analyzer; an interactive controller

"that controls flow of an interactive status and accessing an application, the

interactive controller putting series of interactive sequences having calling

relations together in a plurality of interactive tasks having an upper interactive

task and a lower interactive task in a hierarchical structure, the interactive

controller modifying one of the interactive sequences in an upper interactive

task in accordance with a lower interactive task"; an output statement

generator; a speech generator; an application interface; and an interactive

task hierarchical database "that stores the interactive tasks including the

modified interactive sequence in a hierarchical structure". Appellant

respectfully submits that the Norton et al. reference as relied upon does not

disclose these features.

As emphasized in the Amendment dated January 11, 2005, the

interactive speech interface unit of claim 1 includes in combination an

interactive controller that modifies one of the interactive sequences in an

upper interactive task in accordance with a lower interactive task. Although

not necessarily limited thereto and provided merely for explanatory purposes,

these features may be interpreted as described on page 6, lines 24-36 of the

present application with reference to Fig. 7. The upper interactive task may

be interpreted as including interactive sequences PROC_001, PROC_101 and

PROC_102. These are shown as part of the upper interactive sequence in

normal type face in the box at the upper left portion of Fig. 7. The lower

interactive sequence may be interpreted as including interactive sequences

PROC_201 and PROC_202, which are shown in boldface type in the box at

the lower left portion of Fig. 7. The interactive controller decides that one of

the interactive sequences (interactive sequence PROC_101) of the upper

interactive task **should be modified** to the interactive sequence PROC_103

in accordance with the lower interactive sequence (interactive sequences

PROC_201 and PROC_202) as shown in the lower left side box of Fig. 7.

Then, a database subsequently stores an interactive task including modified

interactive sequence PROC_103 in place of interactive sequence PROC_101, as shown in the right side box of Fig. 7. That is, part of the upper interactive sequence of the interactive task is modified or changed based on the lower interactive sequence, so that a modified interactive sequence is stored.

In contrast, in the conventional system shown in the Norton et al. reference, the upper and lower interactive tasks are simply combined without any modification. For example, see Fig. 3A of the Norton et al. reference (simple combination of interactive tasks of "order", "drink" and "size").

In the Response to Arguments section beginning on page 2 of the Final Office Action dated June 27, 2005, the Examiner asserted that modification of upper and lower interactive tasks are disclosed in the Norton et al. reference. Appellant respectfully disagrees for the following reasons.

The Examiner has asserted at the bottom of page 2 of the Final Office Action that modification of upper and lower interactive tasks are disclosed in column 26, line 62 through to column 27, line 2 of the Norton et al. reference. However, this particular portion of the Norton et al. reference as relied upon by the Examiner merely describes that the Dialog Manager accepts a volunteered value (a value other than the value for which the user was prompted), and that the Dialog Manager subsequently outputs an utterance acknowledgment that this has occurred. Two cases are described whereby if the value was a filler for a role-set, the utterance consists of the new role-set's prefix, the new filler's name, and the word "okay", i.e. the sound files < prefix > - prefix, < filler-name > - name, and the _word_ okay.

Accordingly, the above noted portion of the Norton et al. reference as specifically relied upon by the Examiner shows that if the user inputs the volunteered value, the system uses a new role-set or interactive task. The new role-set is designed in the system. That is, the interactive task as described with respect to this particular portion of the Norton et al. reference is not modified, but is merely replaced.

The Examiner has further relied upon column 30, lines 30-37 of the Norton et al. reference as another example of modification of upper and lower interactive tasks (see the bottom of page 2 of the Final Office Action). This particular portion of the Norton et al. reference as relied upon by the Examiner discloses that the Dialog Manager can handle the answer to many different questions, out of sequence. As further disclosed, although it is technically possible to predefine a traditional Dialog Manager which can respond to out-of-sequence responses, due to the number of states which must be defined to accomplish this task and the complexity of each state, it is not practical to do this for any but the most trivial applications.

Appellant however respectfully submits that this particular portion of the Norton et al. reference as specifically relied upon by the Examiner, describes that the system can respond to out-of-sequence responses. This does not specifically describe modification of an interactive task, or more particularly modifying one of interactive sequences in an upper interactive task in accordance with a lower interactive task, as featured in claim 1.

The Examiner has further relied upon column 30, lines 40-50 of the Norton et al. reference as disclosing an example of modification of upper and lower interactive tasks (see the bottom of page 2 of the Final Office Action). This particular portion of the Norton et al. reference as relied upon by the Examiner discloses that the Dialog Manager is a flexible processor of information and a processor of information flow which can conduct interactive voice dialog to accomplish a top-level task based on a task model. As disclosed, once completed, the task can be output to a data base or other memory for later processing or storage.

Appellant respectfully submits that this particular portion of the Norton et al. reference as specifically relied upon by the Examiner merely describes a flexible processor of information. This particular portion of the Norton et al. reference does not specifically describe modification of an interactive task, or more particularly modifying one of interactive sequences in an upper interactive task in accordance with a lower interactive task, as featured in claim 1.

On page 2 of the Advisory Action dated September 6, 2005, the Examiner has asserted that "As Fig. 7 in Applicant's drawings shows, modification of the upper interactive task consists of appending (*combining*) the fetched pertinent lower interactive task, which is necessary for continuation of the process". Appellant respectfully submits that in view of the above noted assertion, it would appear that the Examiner has failed to appreciate the interactive speech interface unit as featured in claim 1.

Particularly, as noted previously, the interactive controller of claim 1 is featured as "modifying one of the interactive sequences in an upper interactive task in accordance with a lower interactive task". As emphasized previously with respect to Fig. 7 of the present application, an interactive task is stored in the database as including modified interactive sequence PROC_103 in place of interactive sequence PROC_101. Appellant respectfully submits that this modification of claim 1 does not merely consist of "appending (*combining*)", or merely adding or supplementing the lower interactive task to the upper interactive task, as apparently suggested by the Examiner. In contrast, the interactive controller of claim 1 **modifies** the interactive sequence, thus changing the interactive sequence, in accordance with the lower interactive task. The interactive speech interface unit of claim 1 does not merely add or supplement another task to the interactive sequence, so that the final product is the original interactive sequence unmodified or unchanged as followed by another task, as apparently suggested by the Examiner.

Appellant therefore respectfully submits that the interactive speech interface unit of claim 1 distinguishes over the Norton et al. reference as relied upon by the Examiner, and that this rejection of claims 1-6 is improper for at least these reasons.

Claim 7

The interactive speech interface system of claim 7 includes in combination an interactive controller "coupled to the analysis part, the

interactive task hierarchical data- base and the interactive sequence memory, the interactive controller providing an interactive task in response to the semantic representation, modifying the interactive sequence in the upper interactive task of the interactive task in response to the lower interactive task of the interactive task, and providing the lower interactive task with the modified interactive sequence...".

The interactive controller of claim 7 **modifies** the interactive sequence in the upper interactive task of the interactive task in response to the lower interactive task of the interactive task. This is not merely "appending (*combining*)", or adding or supplementing another task to the sequence, as apparently suggested by the Examiner. As emphasized in the Amendment dated January 11, 2005, the Norton et al. reference as relied upon by the Examiner does not disclose modifying an interactive sequence in an upper interactive task responsive to a lower interactive task, as featured in claim 7. As emphasized above with respect to claim 1, the specific portions of the Norton et al. reference as identified in the Response to Arguments section beginning on page 2 of the current Office Action, do not disclose these features.

Appellant therefore respectfully submits that the interactive speech interface system of claim 7 distinguishes over the Norton et al. reference as relied upon by the Examiner, and that this rejection of claims 7-14 is improper for at least these reasons.

CONCLUSION

Appellant respectfully submits that claims 1-14 distinguish over the prior art as relied upon by the Examiner for at least the above reasons. Appellant therefore respectfully requests that the final rejection of claims 1-14 be withdrawn, and that these corresponding claims be passed to issue in the present application.

In the event that there are any outstanding matters remaining in the present application, please contact Andrew J. Telesz, Jr. (Reg. No. 33,581) at (571) 283-0720 in the Washington, D.C. area, to discuss these matters.

Pursuant to the provisions of 37 C.F.R. 1.17 and 1.136(a), the Appellant hereby petitions for an extension of one (1) month to December 27, 2005, for the period in which to file a response to the outstanding Office Action. The required fee of $120.00 should be charged to Deposit Account No. 50-0238.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment for any additional fees that may be required, or credit any overpayment, to Deposit Account No. 50-0238 for any additional fees required under 37 C.F.R. 41.20, particularly extension of time fees.
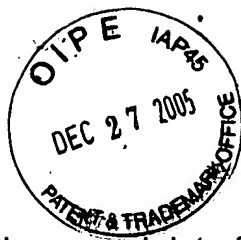
Respectfully submitted,

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Claims Appendix

1) An interactive speech interface unit comprising:

a speech recognizer that recognizes input speech of user utterance and converts the recognized input speech into a character string;

an input statement analyzer that analyzes the character string and converts the analyzed character string into semantic representation;

an interactive controller that controls flow of an interactive status and accessing an application, the interactive controller putting series of interactive sequences having calling relations together in a plurality of interactive tasks having an upper interactive task and a lower interactive task in a hierarchical structure, the interactive controller modifying one of the interactive sequences in an upper interactive task in accordance with a lower interactive task;

an output statement generator that generates an intermediate language to be output to the user;

a speech generator that converts the intermediate language into speech and outputs the speech;

an application interface that accesses an application using the semantic representation output from the interactive controller; and

an interactive task hierarchical database that stores the interactive tasks including the modified interactive sequence in a hierarchical structure.

2) The interactive speech interface unit according to Claim 1, wherein lower interactive tasks in the hierarchical structure are prepared to include all sub-interactive sequences which are needed for an upper interactive task.

3) The interactive speech interface unit according to Claim 1, further comprising an interactive task chaining part that executes an upper/lower chain of the interactive tasks during execution of a dialog and dynamically switches interactive sequences.

4) The interactive speech interface unit according to Claim 1, wherein the interactive controller further comprises a keyword/bookmark catalog interactive sequence storage, a keyword/bookmark storage, a user interactive sequence catalog interactive sequence storage, and a user interactive sequence storage, whereby catalog functions of the interactive sequences by a user are added so as to change flow of a dialog by the user.

5) The interactive speech interface unit according to Claim 4, wherein the interactive controller receives the semantic representation including a recognized character string from the input statement analyzer, decides whether a keyword corresponding to a present interactive status is included in the recognized character string, and adds an interactive sequence using the keyword if the keyword is included in the recognized character string.

6) The interactive speech interface unit according to Claim 3, wherein the switching of the interactive sequences is implemented by describing and rewriting the interactive sequence as an action of an interactive procedure.

7) An interactive speech interface system comprising:

a speech recognition part receiving speech from a user, the speech recognition part converting the input speech into a character string;

an analysis part coupled to the speech recognition part, the analysis part analyzing the character string received from the speech recognition part and converting the received character string into a semantic representation;

an interactive task hierarchical database storing a plurality of interactive tasks each of which includes an interactive sequence in a hierarchical structure so that the interactive tasks include an upper interactive task and a lower interactive task;

an interactive sequence memory storing the interactive sequence;

an interactive controller coupled to the analysis part, the interactive task hierarchical database and the interactive sequence memory, the interactive controller providing an interactive task in response to the semantic representation, modifying the interactive sequence in the upper interactive task of the interactive task in response to the lower interactive task of the interactive task, and providing the lower interactive task with the modified interactive sequence;

an output statement generation part coupled to the interactive controller, the output statement generation part generating an intermediate language in response to the interactive task provided by the interactive controller; and

a speech generator coupled to the output statement generation part, the speech generator converting the intermediate language into speech and outputting the speech.

8) The interactive speech interface system according to claim 7, further comprising a speech recognition database coupled to the speech recognition part, the speech recognition database storing information used for the speech recognition.

9) The interactive speech interface system according to claim 7, further comprising an input statement analysis database coupled to the analysis part, the input statement analysis database storing information used for the analysis of the character string.

10) The interactive speech interface system according to claim 7, further comprising an output statement analysis database coupled to the output statement generation part, the output statement analysis database storing information used for the generation of the intermediate language.

11) The interactive speech interface system according to claim 7, further comprising:

an application receiving a command and providing a result in response to a treatment of the application; and

an application interface part coupled between the interactive controller and the application, the application interface part providing the command to the application in response to the semantic representation delivered from the interactive controller and converting the result provided by the application into the semantic representation.

12) The interactive speech interface system according to claim 7, further comprising an interactive task chain part coupled between the interactive controller and the interactive task hierarchical database, the interactive task chain part fetching a chain of the interactive tasks delivered from the interactive task hierarchical database and replacing the interactive tasks.

13) The interactive speech interface system according to claim 7, further comprising:

a keyword memory coupled to the interactive controller for storing a keyword; and

a keyword registration interactive sequence memory coupled to the interactive controller for storing an interactive sequence for registration of the keyword.

14) The interactive speech interface system according to claim 7, further comprising:

a bookmark memory coupled to the interactive controller for storing a bookmark; and

a bookmark registration interactive sequence memory coupled to the interactive controller for storing an interactive sequence for registration of the bookmark.

<u>Evidence Appendix</u>

No evidence has been submitted under 37 C.F.R. 1.130, 1.131, or

1.132, or entered by the Examiner in connection with this pending Appeal.

Thus, there are **no** copies of evidence included in this Appendix.

Related Proceeding Appendix

There are no appeals or interferences that may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in this pending Appeal. Thus, there are **no** copies of decisions included in this Appendix.